Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A method for locating defective areas of a disk included as part of a hard disk drive, comprising:

determining a number of detected defects per unit area of said disk;

comparing said number of detected defects per unit area of said disk to a threshold amount;

generating a flag if said number of defects per unit area of said disk is greater than said threshold amount;

receiving a first indication that a portion of said disk contains a defect, wherein said step of determining a number of defects per unit area of said disk comprises, in response to receiving said first indication, incrementing a value i held by a counter by a value n, wherein said value i represents said number of detected defects per unit area of said disk, and wherein n is the amount by which i is incremented when said indication that a portion of said disk contains a defect is received; and

decrementing said value i held by said counter by a first amount s_1, wherein said step of decrementing is completed prior to receiving a second indication that a portion of said disk contains a defect, and wherein s_1 is a rate of decay of said value i when said value i is greater than a first amount.

2-4. (cancelled)

5. (previously presented) The method of Claim 1, further comprising:

receiving said second indication that a portion of said disk contains a defect, wherein said step of determining a number of defects per unit area of said disk further comprises, in response to receiving said second indication, incrementing said value i held by said counter by said value n, wherein said value i represents said number of detected defects per unit area of said disk.

6. (original) The method of Claim 5, further comprising decrementing said value i held by said counter by a second amount s_2, wherein said step of decrementing is completed prior to receiving a third indication that a portion of said disk contains a defect, and wherein s_2 is a rate of decay of said value i when said value i is greater than a second amount.

7. (previously presented) A method for locating defective areas of a disk included as part of a hard disk drive, comprising:

determining a number of detected defects per unit area of said disk;

comparing said number of detected defects per unit area of said disk to a threshold amount;

generating a flag if said number of defects per unit area of said disk is greater than said threshold amount; and

receiving a first indication that a portion of said disk contains a defect, wherein said step of determining a number of defects per unit area of said disk comprises:

in response to receiving said first indication, incrementing a value i held by a counter by a value n; and

decrementing said value i held by said counter by a value s_1, wherein said value i represents said number of detected defects per unit area of said disk, and wherein s_1 is a rate of decay of said value i when said value i is greater than a first amount.

8. (original) The method of Claim 7, wherein said step of decrementing by said value s_1 is performed after said step of comparing.

9. (original) The method of Claim 7, further comprising:

receiving a second indication that a portion of said disk contains a defect; and

a second step of determining a number of defects per unit area of said disk, wherein said second step of determining a number of defects per unit area of said disk comprises, in response to receiving said second indication, incrementing said value i held by said counter by said value n.

10. (original) The method of Claim 9, further comprising decrementing said value i by a value s_2, wherein s_2 is a rate of decay of said value i when said value i is greater than a second amount.

11. (original) The method of Claim 10, wherein said step of decrementing by said value s_2 is performed after a second step of comparing.

12. (original) The method of Claim 1, further comprising, in response to generating a flag, sparing at least a first portion of said disk.

13. (original) The method of Claim 1, wherein said number of detected defects per unit area of said disk is determined with respect to a length of a selected track located within a selected one or more writable sectors on said disk.

14. (original) The method of Claim 1, wherein information specifying a location of a detected defect is not stored.

15. (original) A method for identifying defective areas of a disk in a computer hard disk drive, comprising:

selecting a defect density error threshold;

assigning a value n to a defect;

in response to receiving a signal indicating that a defect has been detected, adding said value n to a counter value i, wherein n is the amount by which i is incremented after a defect is detected, and wherein i represents a density of detected defects;

decrementing said counter value i by an amount s for each selected portion of said disk in which a defect is not encountered, wherein s is a rate of decay of said value i; and

generating a defect density error flag if said counter value i is greater than said defect density error threshold.

16. (original) The method of Claim 15, wherein said value n is one, and wherein said amount s is less than or equal to one.

17. (original) The method of Claim 15, wherein said amount s is selected from a plurality of values, and wherein a one of said values selected depends on said counter value.

18. (original) The method of Claim 15, wherein said amount s is variable and depends on said counter value.

19. (original) The method of Claim 15, wherein said counter value is equal to zero if no defects have been detected.

20. (original) The method of Claim 15, wherein said defect density error threshold is equal to $(D-1) \cdot n$, where D is a selected number of defects.

21. (original) The method of Claim 15, further comprising, in response to said generated defect density error flag, sparing a selected portion of said disk, wherein said selected portion of said disk corresponds to a length of a track on said disk required to store a byte of user data.

22. (original) An apparatus for detecting defective areas of a disk included as part of a hard disk drive, comprising:

a summing block;

an input for receiving an indication of a defect, wherein a first value is provided to said summing block upon receipt of said indication of said defect;

a down counter, wherein said down counter decrements a first sum received from said summing block; and

a comparator, wherein a decremented sum received from said down counter is compared to a threshold value, and wherein a flag is generated if said value received from said down counter is not an acceptable value.

23. (original) The apparatus of Claim 22, wherein upon receipt of a second indication of a defect said first value is added to a decremented sum provided by said down counter to produce a second sum.

24. (original) The apparatus of Claim 22, wherein an amount by which said down counter decrements a sum received from said summing block is varied according to a value of said decremented sum.

25-26. (cancelled)

27. (previously presented) A method for locating defective areas of a disk included as part of a hard disk drive, comprising:

determining a number of detected defects per unit area of said disk;

comparing said number of detected defects per unit area of said disk to a threshold amount; and

generating a flag if said number of defects per unit area of said disk is greater than said threshold amount,

wherein said number of detected defects per unit area of said disk is determined with respect to a length of a selected track located within a selected one or more writable sectors on said disk.

28. (previously presented) The method of Claim 7, wherein said number of detected defects per unit area of said disk is determined with respect to a length of a selected track located within a selected one or more writable sectors on said disk.

29. (previously presented) The method of Claim 7, further comprising, in response to generating a flag, sparing at least a first portion of said disk.

30. (previously presented) A method comprising:

providing a disk drive having a disk;

generating a flag if a defect density in an area of said disk is greater than a selected amount, wherein said defect density is determined by:

incrementing a counter value if a defect is detected in a selected portion of said area of said disk, and

decrementing the counter value if a defect is not detected in a selected portion of said area of said disk.

31. (previously presented) The method of Claim 30, wherein the counter value is incremented by a first amount if a defect is detected, wherein the counter value is

decremented by a second amount if a defect is not detected, and wherein the first amount is different from the second amount.

32. (previously presented) The method of Claim 31, wherein the first amount is variable.

33. (previously presented) The method of Claim 31, wherein the second amount is variable.

34. (previously presented) The method of Claim 31, wherein both the first amount and the second amount are variable.

35. (previously presented) The method of Claim 30, wherein the counter value is limited to a maximum value.

36. (previously presented) The method of Claim 30, wherein the counter value is limited to a minimum value.

37. (previously presented) The method of Claim 30, wherein the counter value is both limited to a maximum value and a minimum value.

38. (previously presented) The method of Claim 30, further comprising, in response to generating a flag, sparing at least a first portion of said disk.

39. (previously presented) A hard disk drive comprising:

a disk; and

circuitry for generating a flag if a defect density in an area of said disk is greater than a selected amount, wherein said defect density is determined by:

incrementing a counter value if a defect is detected in a selected portion of said area of said disk, and

decrementing the counter value if a defect is not detected in a selected portion of said area of said disk.

40. (previously presented) The hard disk drive of Claim 39, wherein the counter value is incremented by a first amount if a defect is detected, wherein the counter value is decremented by a second amount if a defect is not detected, and wherein the first amount is different from the second amount.

41. (previously presented) The hard disk drive of Claim 40, wherein the first amount is variable.

42. (previously presented) The hard disk drive of Claim 40, wherein the second amount is variable.

43. (previously presented) The hard disk drive of Claim 40, wherein both the first amount and the second amount are variable.

44. (previously presented) The hard disk drive of Claim 39, wherein the counter value is limited to a maximum value.

45. (previously presented) The hard disk drive of Claim 39, wherein the counter value is limited to a minimum value.

46. (previously presented) The hard disk drive of Claim 39, wherein the counter value is both limited to a maximum value and a minimum value.

47. (new) The method of Claim 27, wherein said step of determining a number of defects per unit area of said disk comprises calculating a sum of defects occurring within a selected portion of said disk.

48. (new) The method of Claim 27, further comprising receiving a first indication that a portion of said disk contains a defect, wherein said step of determining a number of defects per unit area of said disk comprises, in response to receiving said first indication, incrementing a value i held by a counter by a value n, wherein said value i represents said number of detected defects per unit area of said disk, and wherein n is the amount by which i is incremented when said indication that a portion of said disk contains a defect is received.

49. (new) The method of Claim 48, further comprising decrementing said value i held by said counter by a first amount s_1, wherein said step of decrementing is completed

prior to receiving a second indication that a portion of said disk contains a defect, and wherein s_1 is a rate of decay of said value i when said value i is greater than a first amount.

50. (new) The method of Claim 49, further comprising:

receiving said second indication that a portion of said disk contains a defect, wherein said step of determining a number of defects per unit area of said disk further comprises, in response to receiving said second indication, incrementing said value i held by said counter by said value n, wherein said value i represents said number of detected defects per unit area of said disk.

51. (new) The method of Claim 50, further comprising decrementing said value i held by said counter by a second amount s_2, wherein said step of decrementing is completed prior to receiving a third indication that a portion of said disk contains a defect, and wherein s_2 is a rate of decay of said value i when said value i is greater than a second amount.

52. (new) The method of Claim 27, further comprising receiving a first indication that a portion of said disk contains a defect, wherein said step of determining a number of defects per unit area of said disk comprises:

in response to receiving said first indication, incrementing a value i held by a counter by a value n; and

decrementing said value i held by said counter by a value s_1, wherein said value i represents said number of detected defects per unit area of said disk, and wherein s_1 is a rate of decay of said value i when said value i is greater than a first amount.

53. (new) The method of Claim 52, wherein said step of decrementing by said value s_1 is performed after said step of comparing.

54. (new) The method of Claim 52, further comprising:

receiving a second indication that a portion of said disk contains a defect; and

a second step of determining a number of defects per unit area of said disk, wherein said second step of determining a number of defects per unit area of said disk comprises, in response to receiving said second indication, incrementing said value i held by said counter by said value n.

55. (new) The method of Claim 54, further comprising decrementing said value i by a value s_2, wherein s_2 is a rate of decay of said value i when said value i is greater than a second amount.

56. (new) The method of Claim 55, wherein said step of decrementing by said value s_2 is performed after a second step of comparing.

57. (new) The method of Claim 27, further comprising, in response to generating a flag, sparing at least a first portion of said disk.

58. (new) The method of Claim 27, wherein information specifying a location of a detected defect is not stored.